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10/521,774	01/21/2005	Akira Obuchi	040894-7130	2534

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EXAMINER	
YOUNG, NATASHA E	
ART UNIT	**PAPER NUMBER**
1797	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/521,774	OBUCHI ET AL.	
	Examiner	Art Unit	
	Natasha Young	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 January 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☒ Claim(s) *15* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 January 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *01/13/2006, 10/10/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 15 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The phrase "partly cut away to form" of claim 15 is fundamentally the same as "partly opened to form" of claim 14.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Jobson et al (EP 1 016 777 A2).

Regarding claim 1, Jobson et al teaches a heat exchanger comprising: a partition type heat transfer material for parting a high temperature fluid and a low temperature fluid from each other, wherein the heat transfer material is bellows-shaped and is arranged such that both the fluids flow parallel or counter to each other mainly through the gap portion in the bellows section of the heat transfer material along the ridge line or valley line thereof (see Abstract, paragraphs 0011 0030, and figure 2).

Regarding claim 2, Jobson et al teaches a self-heat exchange type heat exchanger comprising: a partition type heat transfer material for parting a high temperature fluid and a low temperature fluid from each other, wherein the heat transfer material is bellows-shaped and is arranged such that both the fluids flow counter to each other mainly through the gap portion in the bellows section of the heat transfer material along the ridge line or valley line thereof, the heat transfer material has a fluid forwarding space portion at one or both ends thereof crossing the ridge line of the bellows section for forwarding one of the fluids to the gap portion in the bellows section on the opposite side thereof, and the fluid which has been forwarded to the opposite side via the fluid forwarding space portion acts as the other fluid to be heat-exchanged to perform heat exchange (see Abstract, paragraphs 0004, 0011, and 0017, and figure 2), where 6a is the internal heating element.

Regarding claim 3, Jobson et al teaches a reactor comprising: (a) a self-heat exchange type heat exchanger having a partition type heat transfer material for parting a high temperature fluid and a low temperature fluid from each other, wherein the heat transfer material is bellows-shaped and is arranged such that both the fluids flow counter to each other mainly through the gap portion in the bellows section of the heat transfer material along the ridge line or valley line thereof and the heat transfer material has a fluid forwarding space portion at one or both ends thereof crossing the ridge line of the bellows section for forwarding one of the fluids to the gap portion in the bellows section on the opposite side thereof, and the fluid which has been forwarded to the opposite side via the fluid forwarding space portion acts as the other fluid to be heat-

exchanged to perform heat exchange; and (b) a heating element or heat-absorbing element provided in the fluid forwarding space portion of the heat exchanger (see Abstract, paragraphs 0004, 0011, and 0017, and figure 2).

Claims 4-5 depend on claim 3 such that the reasoning used to reject claim 3 will be used to reject the dependent portions of the claims.

Regarding claim 4, Jobson et al teaches a reactor wherein a catalyst which accelerates exothermic reaction is supported on the entire surface of the heat transfer material of the heat exchanger or the surface thereof in the vicinity of the fluid forwarding space portion and as the fluid there is used one including the reactive components (see paragraphs 0009 and 0015).

Regarding claim 5, Jobson et al teaches a reactor wherein as the heat transfer material of the heat exchanger there is used one having heat storage capacities, a catalyst which accelerates exothermic reaction is supported on the entire surface of the heat transfer material of the heat exchanger or the surface of the region close to the inlet/outlet of the fluid, an adsorbent which adsorbs the reactive components at low temperature and releases the reactive components at high temperature is supported on the entire surface of the heat transfer material of the heat exchanger or the surface thereof in the vicinity of the fluid forwarding space portion and as the fluid there is used one including the reactive components (see paragraphs 0015-0016 and 0018), since metals are heat conductive these materials are interprets as having heat storage capacities.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jobson et al (EP 1 016 777 A2).

Regarding claim 9, Jobson et al teaches a radiation heater comprising: a self-heat exchange type heat exchanger having a partition type heat transfer material for parting a high temperature fluid and a low temperature fluid from each other, wherein the heat transfer material is bellows-shaped and is arranged such that both the fluids flow counter to each other mainly through the gap portion in the bellows section of the heat transfer material along the ridge line or valley line thereof, and the heat transfer material has a fluid forwarding space portion at one or both ends thereof crossing the ridge line of the bellows section for forwarding one of the fluids to the gap portion in the bellows section on the opposite side thereof, and the fluid which has been forwarded to the opposite side via the fluid forwarding space portion acts as the other fluid to be heat-exchanged to perform heat exchange; and (b) a burner disposed in the fluid forwarding space portion of the heat exchanger (see Abstract, paragraphs 0004, 0011, and 0017, and figure 2).

Jobson et al does not teach a radiation heater wherein the wall parting the fluid forwarding space portion in which the burner is disposed from the exterior is formed by a heat radiating plate.

It would have been an obvious matter of design choice to use a heat radiating plate instead of a heating coil, since applicant has not disclosed that a heat radiating plate solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with a heat radiating plate.

When there is a design need or market pressure to solve a problem (**improve heat transfer**) and there are a finite number of identified, predictable solutions

(**location of heating element within the fluid forwarding space portion**), a person of ordinary skill has good reason to pursue the known options (**the heating element located on the wall in the fluid forward space portion**) within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and commonsense.

Regarding claim 10, Jobson et al teaches a radiation heater comprising: a self-heat exchange type heat exchanger having a partition type heat transfer material for parting a high temperature fluid and a low temperature fluid from each other, wherein the heat transfer material is bellows-shaped and is arranged such that both the fluids flow counter to each other mainly through the gap portion in the bellows section of the heat transfer material along the ridge line or valley line thereof, and the heat transfer material has a fluid forwarding space portion at one or both ends thereof crossing the ridge line of the bellows section for forwarding one of the fluids to the gap portion in the bellows section on the opposite side thereof, and the fluid which has been forwarded to the opposite side via the fluid forwarding space portion acts as the other fluid to be heat-exchanged to perform heat exchange; and (b) an exothermic reaction-accelerating catalyst supported on the entire surface of the heat transfer material of the heat exchanger or the surface thereof in the vicinity of the fluid forwarding space portion (see Abstract, paragraphs 0004, 0011, and 0015-0017, and figure 2).

Jobson et al does not teach a radiation heater wherein the wall parting the fluid forwarding space portion in which the burner is disposed from the exterior is formed by a heat radiating plate.

It would have been an obvious matter of design choice to use a heat radiating plate instead of a heating coil, since applicant has not disclosed that a heat radiating plate solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with a heat radiating plate.

When there is a design need or market pressure to solve a problem (**improve heat transfer**) and there are a finite number of identified, predictable solutions (**location of heating element within the fluid forwarding space portion**), a person of ordinary skill has good reason to pursue the known options (**the heating element located on the wall in the fluid forward space portion**) within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and commonsense.

Claims 6-7 and 11-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jobson et al (EP 1 016 777 A2) as applied to claims 2 and 4 above, and further in view of Choi (US 6,409,864 B1).

Claim 6 depends on claim 3 such that the reasoning used to reject claim 3 will be used to reject the dependent portions of the claim.

Regarding claim 6, Jobson et al does not teach a reactor further comprising: a particle removing filter for catching and removing fine particles provided in close contact with the side of the heat transfer material of the heat exchanger to which the fluid is forwarded.

Jobson et al does not teach filter material provided in the gap portion of the bellows section of the heat transfer material.

Choi teaches a pleated filter with a spacer (see Abstract and figure 1).

The combination of the prior art elements of heat transfer material and a spacer capable of filtering would have yielded the predictable result of increasing the effectiveness of the catalytic purification device.

Claim 7 depends on claim 4 such that the reasoning used to reject claim 4 will be used to reject the dependent portions of the claim.

Regarding claim 7, Jobson et al does not teach a reactor further comprising: a particle removing filter for catching and removing fine particles provided in close contact with the side of the heat transfer material of the heat exchanger to which the fluid is forwarded.

Jobson et al does not teach filter material provided in the gap portion of the bellows section of the heat transfer material.

Choi teaches a pleated filter with a spacer (see Abstract and figure 1).

The combination of the prior art elements of heat transfer material and a spacer capable of filtering would have yielded the predictable result of increasing the effectiveness of the catalytic purification device.

Claim 11 depends on claim 2 such that the reasoning used to reject claim 2 will be used to reject the dependent portions of the claim.

Regarding claim 11, Jobson et al does not teach a self-heat exchange type heat exchanger wherein at least one air-permeable structure different from the heat transfer material is provided in the gap portion of the bellows section of the heat transfer material.

Jobson et al does not teach filter material provided in the gap portion of the bellows section of the heat transfer material.

Choi teaches a pleated filter with a spacer (see Abstract and figure 1).

The combination of the prior art elements of heat transfer material and a spacer capable of filtering would have yielded the predictable result of increasing the effectiveness of the catalytic purification device.

Claim 12 depends on claim 11 such that the reasoning used to reject claim 11 will be used to reject the dependent portions of the claim.

Regarding claim 12, Jobson et al does not teach a self-heat exchange type heat exchanger wherein the air-permeable structure acts as a spacer.

Jobson et al does not teach filter material provided in the gap portion of the bellows section of the heat transfer material.

Choi teaches a pleated filter with a spacer (see Abstract and figure 1).

The combination of the prior art elements of heat transfer material and a spacer capable of filtering would have yielded the predictable result of increasing the effectiveness of the catalytic purification device.

Claim 13 depends on claim 2 such that the reasoning used to reject claim 2 will be used to reject the dependent portions of the claim.

Regarding claim 13, Jobson et al teaches a self-heat exchange type heat exchanger further comprising: a functional material such as catalyst, adsorbent, heat storage material (see Abstract and paragraphs 0015-0017).

Jobson et al does not teach filter material provided in the gap portion of the bellows section of the heat transfer material.

Choi teaches a pleated filter with a spacer (see Abstract and figure 1).

The combination of the prior art elements of heat transfer material and a spacer capable of filtering would have yielded the predictable result of increasing the effectiveness of the catalytic purification device.

Claim 14 depends on claim 2 such that the reasoning used to reject claim 2 will be used to reject the dependent portions of the claim.

Regarding claim 14, Jobson et al teaches a self-heat exchange type heat exchanger wherein the surface of the heat transfer material is partly opened to form a fluid forwarding space portion (see figure 2, elements 9 and 10 (reversing chambers)).

Claim 15 depends on claim 14 such that the reasoning used to reject claim 14 will be used to reject the dependent portions of the claim.

The examiner believes that there is no difference between claim 15 and claim 14 and so claim 15 is rejected under the same reasoning as claim 14.

Claim 16 depends on claim 14 such that the reasoning used to reject claim 14 will be used to reject the dependent portions of the claim.

Regarding claim 16, Jobson et al teaches a self-heat exchange type heat exchanger wherein the surface of the heat transfer material is partly provided with one or a plurality of openings which are closed at the circumference thereof to form a fluid forwarding space portion (see figure 2, elements 9 and 10 (reversing chambers)).

Claims 17-19 rejected under 35 U.S.C. 103(a) as being unpatentable over Jobson et al (EP 1 016 777 A2) and Choi (US 6,409,864 B1) as applied to claim 12 above, and further in view of Burkhart (US 3,679,062).

Claim 17 depends on claim 12 such that the reasoning used to reject claim 12 will be used to reject the dependent portions of the claim.

Regarding claim 17, Jobson et al teaches a self-heat exchange type heat exchanger wherein as the heat transfer material there is used one having no air permeability, and the self-heat exchange type heat exchanger is formed by the heat transfer material (see Abstract, paragraphs 0004, 0011, and 0017, and figure 2), where 6a is the internal heating element.

Jobson does not teach a self-heat exchange type heat exchanger is formed by the heat transfer material, a structure for spacer and a filter cloth in combination.

Choi teaches a pleated filter with a spacer (see Abstract and figure 1).

Burkhart teaches a filter leaf, a spacer, and a filter cloth (see Abstract and column 1, lines 33-40).

The combination of the prior art elements of heat transfer material, a spacer capable of filtering, and a filter cloth in combination would have yielded the predictable result of increasing the effectiveness of the catalytic purification device.

Claims 18-19 depend on claim 17 such that the reasoning used to reject claim 17 will be used to reject the dependent portions of the claim.

Regarding claim 18, Jobson et al teaches a self-heat exchange type heat exchanger wherein the structure extends beyond the end of the fluid forwarding space

portion of the heat transfer material, and a filter cloth is formed therearound in the form of bellows.

Jobson does not teach a self-heat exchange type heat exchanger is formed by the heat transfer material, a structure for spacer and a filter cloth in combination.

Choi teaches a pleated filter with a spacer (see Abstract and figure 1).

Burkhart teaches a filter leaf, a spacer, and a filter cloth (see Abstract and column 1, lines 33-40).

The combination of the prior art elements of heat transfer material, a spacer capable of filtering, and a filter cloth in combination would have yielded the predictable result of increasing the effectiveness of the catalytic purification device.

It would have been an obvious matter of design to construct filter covers in the shape of bellows, since applicant has not disclosed that filter covers in the shape of bellows solves any stated problems or is for any particular purpose and it appears that the invention would perform equally well with filter covers in the shape of bellows.

Regarding claim 19, Jobson et al teaches a self-heat exchange type heat exchanger wherein the surface of the heat transfer material is partly opened to form a fluid forwarding space portion, or the end of the heat transfer material is partly cut away to form a fluid forwarding space portion (see figure 2, elements 9 and 10 (reversing chambers)).

Claims 8 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jobson et al (EP 1 016 777 A2) and Choi (US 6,409,864 B1) as applied to claims 3 and 4 above, and further in view of Kurematsu (JP 11-264679).

Claim 8 depends on claim 3 or claim 4 such that the reasoning used for either claim 3 or claim 4 will be used to reject the dependent portions of the claim.

Regarding claim 8, Jobson et al does not teach a reactor wherein the heat transfer material includes a filtrating function allowing gas permeation and particle catch, and is not provided with a fluid forwarding space portion through which the fluid is forwarded from one side to the other side of the heat transfer material.

Choi teaches a filtrating function allowing gas permeation and particle catch (see column 1, line 62 through column 2, line 32).

Kurematsu teaches a heat exchanger is not provided with a fluid forwarding space portion through which the fluid is forwarded from one side to the other side of the heat transfer material (see Abstract and figures 1-2).

The combination of the prior art elements of a reactor with heat transfer material and a spacer capable of filtering without with a fluid forwarding space portion through which the fluid is forwarded from one side to the other side of the heat transfer material would have yielded the predictable result of increasing the effectiveness of the catalytic purification device.

Claim 20 depends on claim 8 such that the reasoning used for claim 8 will be used to reject the dependent portions of the claim.

Regarding claim 8, Jobson et al does not teach a reactor wherein the heat transfer material having a filtrating function is retained and formed in the form of a structure for spacer in the form of bellows.

Choi teaches a pleated filter with a spacer (see Abstract and figure 1).

The combination of the prior art elements of heat transfer material and a spacer capable of filtering would have yielded the predictable result of increasing the effectiveness of the catalytic purification device.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Natasha Young whose telephone number is 571-270-3163. The examiner can normally be reached on Mon-Thurs 7:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NY

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